CDF Operations Report

(Aug 28 – Sep 11, 2006)

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All Experimenter's Meeting

September 11, 2006

Store Summary (Aug 28–Sep 4)

Store #	Start Date	Dura-tion [hr]	Init. Lumi [E30]	Deliv. Lumi [pb^{-1}]	Live Lumi [pb^{-1}]	Good w/ Si [pb^{-1}]	Comments
4928	8/27 Sun	26.7	203.4	6.99	5.95 85%	5.94 85%	Trigger Table Test, EVB Test, High Beam loss
4929	8/29 Tue	19.8	125.6	4.00	3.22 81%	3.15 79%	EVB Test, New trigger table, High Muon Trigger rate, Plug Cal DAQ
4930	8/30 Wed	25.6	163.6	5.68	4.88 86%	4.72 83%	DAQ, Silicon cooling water leak Track Trigger Test
4932	8/31 Thu	29.1	220.5 record	7.96	6.44 81%	6.20 78%	Trigger Rate Study Silicon Rack Fan died
4934	9/1 Fri	30.9	208.3	7.81	5.94 76%	5.84 75%	**Forward Cal DAQ board died** Muon HV
Sum		**132.2**		**32.44**	**26.14 81%**	**25.85 80%**	

Store Summary (Sep 4–11)

Store #	Start Date	Dura-tion [hr]	Init. Lumi [E30]	Deliv. Lumi [pb^{-1}]	Live Lumi [pb^{-1}]	Good w/ Si [pb^{-1}]	Comments
4935	9/3 Sun	27.4	190.4	6.43	5.55 86%	5.50 85%	Muon HV, Silicon Calib.
4936	9/4 Mon	19.0	182.9	5.21	4.55 87%	4.55 87%	Silicon PS fuse blown, TECAR abort
4937	9/5 Tue	5.9	158.4	2.30	1.90 82%	1.90 82%	Plug Cal HV Tev Quench
4940	9/6 Wed	24.7	138.1	4.82	3.79 79%	3.66 76%	**Muon DAQ**, High beam loss
4942	9/7 Thu	23.5	203.5	6.47	4.49 69%	4.18 65%	**Tracker DAQ, L1 Trigger**, Track Trig Test, Tev Quench
4947	9/9 Fri	31.5	211.2	7.77	5.61 72%	4.58 60%	**L1 Trigger board**, Silicon DAQ, Trigger Table Test, ACNET
4949	9/10 Mon	-	235.6 record	*On-going Store*			(~3pb^{-1} recorded in eve shift!!) **ACNET fixed, big thanks to AD**
Sum		**131.9**		**33.01**	**25.85 78%**	**24.4 74%**	

Operation Activities 1

- **Controlled Accesses 1**
  - Aug 31 (Thu)
    - Swapped a bad Silicon DAQ board.
    - Fixed flakey plug calorimeter power supply.
      - Cooling fan blocked by network device.
    - Fixed a water leak (new problem) in Silicon cooling line.
      - The air leak still stays.
    - Isolated HV trips in a large sector of the intermediate Muon detector.
      - Tracked down to two chambers, which are kept disabled.
      - Other chambers are recovered.

Operation Activities 2

- **Controlled Accesses 2**
  - Sep 7 (Thu)
    - Replaced dead DAQ board in forward calorimeter.
    - Replaced a crowbar in inner Silicon layer.
    - Replaced a dead fan in Silicon DAQ rack.
      - Fan replacement work started another problem.
      - **Extended access time granted - we thank AD and D0!!**
      - The problem was eventually tracked down to mis-behaved crate controller.
    - Fine alignment work on Muon Detector mover.
  - Sep 8 (Fri)
    - Replaced a dead TDC board.

Other Activities

- Trigger improvement efforts :
  - Trigger rate test to understand the bottle-neck in our trigger system at high luminosity condition.
  - New trigger table test.
  - Stereo tracking trigger upgrade : new firmware test.
- Integration test of new Data Logger with whole DAQ system.
- Effort for making shift operation improved/more efficient :
  - Collecting information on the source of down time.
  - Discussion for improvement of shift instructions / crew education.

Trigger Status

- Current L2 bandwidth : 900 Hz.
- High rate Triggers (intermediate muon / Jet / MET)

L2 trigger	**Target Physics**	Rate (Hz) at L=160E30	**Rate (Hz) at L=200E30**
Intermediate μ	**(PT>15, 0.6<|η|<1)**	100	340
MET+2jets	**ZH->Zbb->ννbb**	100	180
Dimuon (2 cent.)	**J/ψ -> μ μ**	50	120
Dimuon (cent. + int.)	**J/ψ -> μ μ**	30	140
2 b-jet + 1 jet	**Hbb -> bbbb**	24	64
sum	**-**	300	**840**

> 90% of bandwidth!!

- For now, we prescale these hot triggers by factor 200 by hand to minimize DAQ dead time with L>200E30.
- Next trigger table will automate prescaling.
- Studies for a better control of these triggers.
- Commission Upgraded Track Trigger / Calorimeter Trigger Proposal.

CDF Integrated Luminosities